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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
09/748,442	12/27/2000	Dah-Weih Duan	IV00-001.1	4180

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EXAMINER	
SHELTON, BRIAN K	

ART UNIT	PAPER NUMBER
2611	

DATE MAILED: 11/18/2004

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary	Application No.	Applicant(s)	
	09/748,442	DUAN ET AL.	
	Examiner	Art Unit	
	Brian Shelton	2611	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on *27 December 2000*.

2a)☐ This action is **FINAL**. 2b)☒ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *1-102* is/are pending in the application.

4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☒ Claim(s) *1-20, 42-61, and 62-81* is/are allowed.

6)☒ Claim(s) *21 and 82* is/are rejected.

7)☒ Claim(s) *22-41 and 83-102* is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☒ The drawing(s) filed on *27 December 2000* is/are: a)☒ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☐ All b)☐ Some * c)☐ None of:

1.☐ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☒ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☒ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08) Paper No(s)/Mail Date *03262001*.
4) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____.
5) ☐ Notice of Informal Patent Application (PTO-152)
6) ☐ Other: _____.

DETAILED ACTION

1. This Action is in response to the Application filed 27 December 2000.

2. The Application has been examined. **Original claims 1-102** are pending. The rejections cited are as stated below:

Claim Rejections - 35 USC § 102

3. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

> A person shall be entitled to a patent unless –
>
> (b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

4. **Claims 21 and 82** are rejected under 35 U.S.C. 102(b) as being anticipated by Belknap et al. (Belknap), U.S. Patent No. 5,586,264.

As for **claim 21**, Belknap discloses a digital data service system (Fig. **1**, Video Optimized Stream Server System **10**) in communication with a plurality of computing systems (Fig. **20**; delivery of requested video data to set top box client terminals; see col. 19, line 18-35) to provide at least one data object (Requested Video Data) of a plurality of data objects to at least one of the plurality of computing systems (col. 6, lines 21-60; col. 8, line 66 – col. 9, line 32), comprising:

a plurality of data object storage devices (plurality of disks **45** of Storage Nodes **16** (Fig. **1**); see detail at Fig. **1C**) in communication with each other (see col. 7, line 53 - col. 8, line 7, describing RAID mapping of data stored on plurality of disks of storage nodes **16**, wherein a plurality of disks in a RAID configuration inherently discloses the disks in communication with each other to facilitate transfer of redundant data; see col. 5, line 64-67) and with any of the plurality of computing systems (col. 9, lines 16-31, describing transfer of video data among disk storage nodes; col. 18, lines 34-54, describing communication from client systems to request video data); and

a segmentation apparatus (Fig. **1**, Control Node **18**) in communication with the plurality of data object storage devices to fragment any of the data objects into a plurality of segments to allow transfer to and processing by at least one of the computing system of said segments (col. 8, line 66 – col. 9, line 32, describing segmentation of video data by Control Node **18** and allocation of segmented data across storage nodes);

whereby the segmentation apparatus fragments each data object as a function of demand for the data objects (anticipated usage rate; see col. 30, lines 8-21), size of each data object of the plurality of data objects (col. 29, line 52 – col. 30, line 7, wherein the segmentation procedure continues until all M segments of a video data file are processed), amount of retention space available on each of the plurality of digital data storage devices (col. 31, lines 9-17, describing striping begun from disk with most free space), and available

bandwidth (col. 30, lines 22-39, determination of effective disk data rate, i.e., disk transfer bandwidth, of the disk utilized for storing the segments; see col. 31, lines 50-64) for communication with the plurality of computing systems (see col. 29, line 42 – col. 32, line 16, describing segmentation algorithm).

As for **claim 82**, Belknap discloses a video data file distribution system (Fig. **1**, Video Optimized Stream Server System **10**) in communication with a plurality of computing systems (Fig. **20**; delivery of requested video data to set top box client terminals; see col. 19, line 18-35) to provide at least one video data file of a plurality of video data files to the plurality of computer systems (col. 6, lines 21-60; col. 8, line 66 – col. 9, line 32), comprising:

a plurality of video data file retention devices (plurality of disks **45** of Storage Nodes **16** (Fig. **1**); see detail at Fig. **1C**) in communication with each other (see col. 7, line 53 - col. 8, line 7, describing RAID mapping of data stored on plurality of disks of storage nodes **16**, wherein a plurality of disks in a RAID configuration inherently discloses the disks in communication with each other to facilitate transfer of redundant data; see col. 5, line 64-67) and with any of the plurality of computing systems (col. 9, lines 16-31, describing transfer of video data among disk storage nodes; col. 18, lines 34-54, describing communication from client systems to request video data); and

a segmentation apparatus (Fig. **1**, Control Node **18**) in communication with the plurality of video data file retention devices to fragment any of the video data

files into a plurality of segments to allow transfer to and processing by at least one of the computing systems of said segments (col. 8, line 66 – col. 9, line 32, describing segmentation of video data by Control Node **18** and allocation of segmented data across storage nodes);

whereby the segmentation apparatus fragments each video data file as a function of demand for the video data files objects (anticipated usage rate; see col. 30, lines 8-21), size of each video data file of the plurality of video data files (col. 29, line 52 – col. 30, line 7, wherein the segmentation procedure continues until all M segments of a video data file are processed), amount of retention space available on each of the plurality of digital data retention devices (col. 31, lines 9-17, describing striping begun from disk with most free space), and available bandwidth (col. 30, lines 22-39, determination of effective disk data rate, i.e., disk transfer bandwidth, of the disk utilized for storing the segments; see col. 31, lines 50-64) for communication to the plurality of communication devices (see col. 29, line 42 – col. 32, line 16, describing segmentation algorithm).

Allowable Subject Matter

5. **Claims 1-20, 42-61, and 62-81** are allowed.

6. The following is a statement of reasons for the indication of allowable subject matter: The method of selecting segment sizes presented by Applicants in claim 1, namely calculating a first segment size as a first function of a number of the storage

devices, the current digital transfer load, the maximum digital transfer load, and the minimum segment size; assigning a last segment size as the minimum segment size; and calculating all remaining segment sizes as a second function of the number of the storage devices, the current digital data transfer load, the maximum digital data transfer load, and the minimum segment size, as claimed by Applicants, is not disclosed in the prior art of record. While the prior art reveals various methods for determining segment sizes, such as the above described method of Belknap, where segmentation is a function of demand for the data, size of the data, amount of retention space available in the storage devices, and available bandwidth (see discussion above related to rejection of claims 21 and 82), the method of Peters et al., where segment size may be calculated based on the specifications of each storage unit in a storage array (see discussion below), and the method of Aggarwal et al., where segment sizes are calculated according to a Fibonacci sequence (see discussion below), the above described method of calculating segment size values, as claimed by Applicants, is neither disclosed from the prior art, nor obvious in light of their teachings. Accordingly, Claims 1-20 are allowed. The apparatus of claim 42 and computer program medium of claim 62 correspond to method claim 1, and claims 42-61 and 62-81 are allowed for the same rationale.

7. **Claims 22-41 and 83-102** are objected to as being dependent upon a rejected base claim, but would be allowable if rewritten in independent form including all of the limitations of the base claim and any intervening claims.

Conclusion

8. The prior art made of record and not relied upon is considered pertinent to applicant's disclosure.

Chen et al., U.S. Patent No. 5,721,823 discloses a digital layout method for digitized movie files in a near video on demand system wherein movie files are segmented and the segments are allocated to a plurality of storage devices at the headend in order to aggregate the bandwidth of the storage devices in the broadcast of a given movie (abstract; col. 6, line 30 – col. 7, line 39; col. 9, line 42 – col. 10, line 42).

Peters et al., U.S. Patent No. 6,374,336 discloses a system for segmenting video on demand files over a plurality of storage units wherein video files are divided into segments, each segment is stored on a storage unit wherein the distribution of segments may be a function of the specifications of each storage unit (see col. 7, lines 27-33 and col. 19, lines 29-54), and redundancy information for the segment is also stored on a different storage unit in order to improve reliability in the delivery of requested programming (abstract; col. 6, line 24 – col. 10, line 58).

Aggarwal et al., U.S. Patent No. 5,751,336 discloses segmenting movie files according to an algorithm employing a Fibonacci sequence that creates a plurality of segments of progressively increasing segment size, wherein the segments are calculated as a function of bandwidth, consumption rate and the size of the file (abstract; col. 2, line 60 – col. 6, line 34)

Merrit et al., U.S. Patent No. 6,311,251 discloses a system for allocating the storage of segments to a plurality of storage devices in a RAID array wherein segments are allocated to the storage devices according to which of the storage device has the largest available storage capacity (abstract; col. 3, line 65 – col. 5, line 40).

DeBey, U.S. Patent No. 5,701,582 discloses a system for optimizing the transmission of programming by dividing video programming into segments according to a scheduling algorithm, wherein each of the segments may be further divided into fragments, in order to minimize the amount of transmission bandwidth required for the delivery of a given file (abstract; col. 5, line 44 – col. 9, line 50; col. 15, line 36 – col. 19, line 29).

Henderson et al., U.S. Patent No. 5,719,983 discloses a method of storing video data files on storage devices wherein video data having the highest demand is placed in a zone of the storage device with the greatest transfer rate

according to a calculation of the transmission bandwidth required by the video file in order to provide higher transfer rates for more frequently requested video files (abstract; col. 4, line 27 – col. 6, line 65; Figs 3A-3B; Fig. 4).

DuLac, U.S. Patent No. 5,899,582 discloses a digital video storage system used in video on demand applications where video programs are segmented and the segments are stored on successive disks in a disk storage array wherein each stored segment is retrieved from storage and provided to a different tap which provides users with a given portion of the movie file, and further, wherein the system provides on demand functionality (fast-forward, pause, reverse) by allowing the user to change which tap is currently connected, thereby moving forward or backward in the movie file by an amount of time equal to the individual segment length (abstract; col. 2, line 65 – col. 6, line 23).

9. The following are suggested formats for either a Certificate of Mailing or Certificate of Transmission under 37 CFR 1.8(a). The certification may be included with all correspondence concerning this application or proceeding to establish a date of mailing or transmission under 37 CFR 1.8(a). Proper use of this procedure will result in such communication being considered as timely if the established date is within the required period for reply. The Certificate should be signed by the individual actually depositing or transmitting the correspondence or by an individual who, upon information and belief, expects the correspondence to be mailed or transmitted in the normal course of business by another no later than the date indicated.

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Please refer to 37 CFR 1.6(d) and 1.8(a)(2) for filing limitations concerning facsimile transmissions and mailing, respectively.

10. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Brian Shelton whose telephone number is (703) 305-8714. The examiner can normally be reached on Monday-Friday, 7:30-4:00.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Christopher Grant can be reached on (703) 305-4755. The fax phone

number for the organization where this application or proceeding is assigned is 703-872-9306.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see http://pair-direct.uspto.gov. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

Brian Shelton
Examiner
Art Unit 2611

VIVEK SRIVASTAVA
PRIMARY EXAMINER